Reflections on National Parks and Fauna Conservation in NSW

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The first half of the twentieth century saw largely uncontrolled exploitation of wildlife species and significant habitat destruction resulting in part from tax incentives and other policies encouraging clearing and conversion of land for cropping and pastoral activities.

With increasing scientific evidence of species extinction and media coverage of conservation issues, the second half of the century was characterised by significant legislative efforts at both State and Commonwealth levels to protect native species, identify threatened species, populations and communities and devise plans to address threatening processes. Running parallel with this was significant expansion of the irrigation industry in the Murray Darling Basin which profoundly altered wetland and floodplain ecosystems. In the last decade of the millennium there was also a substantial growth in the public reserve system focused on addressing under representation of inland bioregions and implementation of an array of initiatives to encourage conservation of native flora and fauna on private land.

Outcomes to date and prospects for the first half of the twenty-first century are mixed. Several specific incidents and issues over the last decade provide an insight into some noteworthy achievements and some particular challenges.

The reflections that follow are inescapably personal in nature, coloured by the stresses and anxieties that go with leading the NSW National Parks and Wildlife Service (NPWS) through some tumultuous times between March 1998 and October 2003. Some will have also mellowed and matured with the passing of time since then.

I came to the position having previously been a senior executive with the NSW Environment Protection Authority since soon after its inception in 1992. But my interest in wildlife conservation and land management had its origins in my childhood experience growing up on a farm in the Upper Hunter. School holidays were always spent roaming the bush paddocks on foot or on horseback exploring and learning sometimes in the best tradition of the shotgun biologists of the past. When I turned 16 and went to university I used the pay from my first casual job to buy a single-lens-reflex camera and started taking very poor photographs of the wildlife and places which fascinated me.

After graduating from university and a brief stint as an exploration geologist in New Guinea and northwest Queensland I returned to NSW and started teaching science in high schools in the Lower Hunter. The fascination with wildlife and matters environmental continued, I began a Master's degree in wetland biogeography and was appointed to establish the Awabakal Field Studies Centre at Dudley, south of Newcastle. This was for me a dream job that gave me the opportunity to share my fascination with patterns in the landscape and ecological processes with students of all ages. I have particularly fond memories of witnessing the awakening of an interest in things natural in the expressive faces of the young people who shared those daily excursions.

Awabakal led on to my involvement with the establishment of the Hunter Wetlands Group to lobby for protective management of Hunter estuary wetlands, the setting up of the Wetlands Centre at Shortland and a gradual drift into management and advisory roles. I had sometimes thought I might join the NPWS but never seemed to have quite the right background and qualifications for the job that was on offer. I did a short secondment to the Asian Wetland Bureau, based in Kuala Lumpur, co-ordinating education and training programs throughout Asia and then jumped at the opportunity to join the newly established Environment Protection Authority in 1992.

So, when I finally scored a job with the NPWS in 1998, it was as Director General. While the numbers varied during my tenure, I was responsible for 1500 – 2000 staff, a budget of around $250 million per year, some 600 parks and reserves covering more than 6 million hectares of land, around 7% of the state, as well as responsibilities for joint management negotiations with traditional owners, statutory responsibility for cultural heritage protection and a central role with the Marine Parks Authority.

Perhaps not surprisingly, one of my first decisions in NPWS was to establish a position of Director Education and Community Services, with a seat at the Executive table, to focus on trying to achieve more effective engagement of the community in management of parks and reserves. Later, the position of Director Cultural Heritage, a designated Aboriginal position, was also made an Executive position which helped ensure that consideration of Indigenous issues was integrated into Executive deliberations across the board.

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[1] Brian Gilligan was the Director-General of the NSW National Parks and Wildlife Service from March 1998 to October 2003. He was the last DG of NPWS. The organisation became part of the then Department of Environment and Conservation NSW, then the Department of Environment and Climate Change NSW, and in July 2009, the Department of Environment, Climate Change and Water NSW. This paper is an invited contribution to *Australian Zoologist.*

A painful restructure of the organisation followed, focused on trying to achieve greater internal cohesion, more disciplined management and improved capacity to cope with inevitable incremental change. Strategic focus on agency performance and conservation goals was always challenged by the daily churn of crises and media controversies especially around fire, feral animal control and threatened species.

Looking back, I have mixed feelings. I draw satisfaction from involvement in some worthwhile initiatives and programs. I am also frustrated by some of the challenges that have not yet been adequately met and I am very conscious that the tasks that lie ahead still demand a lot of lateral thinking.

Shifting the emphasis from reserve establishment to management results

I first visited the Paroo Overflow channels and lakes of western NSW in 1988. Having initially flown over them in a light plane with colleagues from the Wetlands Centre mid year, I hastened back to see them at ground level in October with the family in tow. Since then, the whole family has had a fascination with the area. A decade or so later it was very satisfying to work with Minister Bob Debus and NPWS Director Western, Terry Korn, to incrementally build the Paroo Darling National Park, based on the foundation work done by Richard Kingsford and his colleagues.

But simply establishing parks and reserves is not enough and management is always going to be problematic when water is a critical component and the protected area is only a small fraction of the drainage catchment. Thankfully, Richard's work with the Paroo River Association also provided the basis for the historic Paroo River Agreement between NSW and Queensland to address issues associated with water extractions from the river.

Sadly our generation has witnessed significant decline in riverine wetland reserves such as Macquarie Marshes Nature Reserve. The combination of water regime changes and removal of grazing cattle has seriously degraded water couch pastures in the Nature Reserve. In some such situations controlled grazing may well be a very effective management tool. In many other situations, while pastoral activities may result in some habitat changes, they may well be sustainable and able to co-exist with wildlife species.

I also wonder if educational tourism in nature reserves hadn't been such a taboo and we had arranged for many more people to explore places like the Macquarie Marshes, might there have been much stronger community support for maintenance of essential water allocations and protection of vital ecological processes.

We now have to manage in ways previously beyond comprehension, including budgeting to buy water to support colonial waterbird breeding events. While the focus was previously on seeking to expand reserves, such as Narran Lakes Nature Reserve, by buying more land, now we question: why bother buying the land if there is no water to maintain the aquatic ecosystems? Might we in future have to consider engineering works within such nature reserves to manipulate water levels to sustain waterbird breeding events?

Adaptive management for the climate change era

Climate change scenarios now being formulated demonstrate the importance of bioregional approaches to reserve design and management (Dunlop and Brown 2008). It is clear that linked reserves and isolated habitat fragments are not mutually exclusive. We will need both if we are going to be able to sustain biodiversity values through more extreme weather events, new threats from feral animals and weed infestations along with more intense wildfires. The need for collaborative management across the landscape, working with other land managers to enhance system resilience and maintain ecological processes is also recognised.

Managing change to minimise biodiversity loss in an era of accelerating climate change will require a paradigm shift for conservation advocates and managers. Tenure based outcomes, maximising areas in the public reserve system may have been a simple and appropriate focus a generation ago, but we are increasingly needing to focus on the biodiversity outcome, regardless of tenure, and needing to monitor progress towards achieving it, modifying management practices as necessary to get the result we are seeking: an increase in the distribution and abundance of a vulnerable species; a reduction in fire frequency or intensity in a fire sensitive vegetation community; a successful colonial waterbird breeding event; or the maintenance a particular ecological process.

The most appropriate management strategy may be quite counter-intuitive: controlled grazing by sheep is an important tool in managing Oolambeyan National Park to maintain and enhance habitat for the Plains Wanderer *Pedionomus torquatus*.

Communicating the science and documenting results

Management strategies need to be based on sound science which can be clearly communicated to the relevant community and the condition of the area must be monitored so that the effectiveness of the management strategies can be periodically evaluated and adjusted to deal with changing circumstances.

Nicholas Carlile's work with David Priddel on Cabbage Tree Island off Port Stephens, otherwise known as John Gould Nature Reserve, is a fine example, highlighting the value of good research, good public communication and adaptive management with a clear objective of increasing the population and breeding success of Gould's Petrel *Pterodroma leucoptera*. Nicholas went on to use his communication skills to 'sell' the story of the bizarre Lord Howe Island Phasmid *Dryococelus australis* now surviving only on Balls Pyramid, a spectacular rock spire off Lord Howe Island.

We were less successful in engendering community support for the Lord Howe Flax Snail *Placostylus bivaricosus*. Sometimes we have to admit that it is difficult to get the community excited about 'less attractive' species. Sometimes too, the story can be very complex, or very subtle and therefore difficult to explain effectively on Sydney morning radio. I recall for example, the difficulty we had explaining on Sydney morning talkback radio, the importance of the soil seedbank under some dead specimens of the Terry Hills Grevillea *Grevillea caleyi* on a northern Sydney development site.

The Independent Scientific Committee

The complex dilemma of separating Dingo *Canis lupus dingo* conservation from wild dog control imperatives made for many challenging interviews on Sydney morning radio. It also highlighted the difficult task facing the Scientific Committee established under the *Threatened Species Conservation Act 1995*. Chris Dickman, and later Paul Adam, chaired the committee with great skill. They and the members of the committee performed very delicate tasks in a very systematic and sensitive manner.

Fortunately, initially Minister Pam Allan, and subsequently Bob Debus, who was the Minister for most of my time with NPWS , were able to defend the role and independence of the committee against calls from others that it should be the Minister deciding whether or not a particular species, population or community was endangered. We successfully argued that social and economic considerations were relevant in deciding what to do about a threatened species, but the initial call on whether or not the species, population or community should be listed as threatened should be independently assessed and decided solely on the available science.

The team that prepared the Fox Threat Abatement Plan (TAP) exemplifies the formulation of sound public policy to guide the allocation of resources and effort to achieve specific and measurable outcomes. Previous efforts had been devoted to simply killing as many foxes as possible across the state, even though there was growing evidence that populations quickly recovered. The Fox TAP clearly identified specific sites where intensified fox control activity could make a difference to vulnerable species and provided the basis for work programs and resource allocations. A great step forward and a foreshadowing of the targeted adaptive management approaches which are now increasingly being applied!

Animal welfare protocols and community feelings about wildlife

Protocols devised during my time with NPWS have established important governance and disciplined management of research projects but in some circumstances have been hijacked by special interest groups and resulted in a net diversion of resources from priority conservation programs.

Calm reading of the court judgement on the Guy Fawkes National Park feral horse cull vindicates the action taken by NPWS and the performance of field staff but the failure to proactively engage with the RSPCA, neighbours and other key stakeholders cost the organisation's reputation dearly and led to a change in policy which limited the NPWS capacity to cost-effectively deal with feral animal issues.

The persistent issue of Rusa deer *Cervus timorensis* in Royal National Park was historically another public perception nightmare but ultimately a good example of sound consultative work with animal welfare people succeeding in operationalising an important control program. There was also something poetic about the fact that the Rusa deer carcases were being fed to the big cats at the Mogo Zoo, including Sumatran tigers, the natural predators of the deer.

The mass death of bats inadvertently denied return access to their roosting cave in Willi Willi National Park and the loss of a small number of Little Penguins *Eudyptula minor* when a research and management team conducted a controlled burn of habitat-destroying Kikuyu Grass *Pennisetum clandestinum* on Montague Island highlighted how a momentary slip by researchers under pressure or an unfortunate weather shift can have major consequences for public perceptions.

Whale strandings also served to demonstrate the challenge of integrating community enthusiasm and emotion with rational decision making by specialists when traumatic incidents have to be dealt with in full view of a live national television audience. With whale populations on the increase, there are bound to be more high profile strandings and the issues management challenges will remain.

I sought to translate the impressive commitment and skills of wildlife carers into a program which makes a real difference to vulnerable species rather than simply trying to save every injured magpie and seagull but with only very limited success because of the ready availability of a champion for every living creature. Without a recognised framework for priority setting and decision making in this area, it remains problematic.

A good example is the situation where we have perhaps half the people in most Sydney's leafy suburbs feeding Brushtail Possums *Trichosurus vulpecula* while the other half are cursing them for rampaging nightly on the roof, devouring valued garden plants or creating foul-smelling dens in ceiling spaces. Relocation is usually ineffective because they are so territorial and judicious culling is generally beyond community acceptance.

In contrast, we seem to accept egg removal and other population control measures for the White Ibis *Threskiornis molucca* without a lot of comment. Such are the complexities of community perceptions and responses to wildlife management issues.

Flying-foxes, also known as fruit bats, *Pteropus* spp pose another complex example. Take two or three threatened species, nationally endangered because of the loss of rainforest habitats, add some strategically located plantings of attractive species in popular public parks and we have the prerequisites for high drama. I can't help wondering if the resources otherwise spent on relocation efforts were invested in well designed umbrellas, protective sails and planting the next generation of trees, co-existence might be more cost effectively achieved?

Kangaroos and pastoral enterprises

Can we get the industry to the point where kangaroos can replace goats as the 'safety net' pastoral product in some marginal rangelands? There are disturbing indications that a new generation of rangeland pastoralists may adjust to the challenge of making enterprises commercially viable in the short term by building businesses based entirely on goats and related species.

This development along with the blunt self righteousness of our recent national positioning on 'scientific whaling' erode the prospects for developing a more sustainable kangaroo industry, based on growing a boutique international market for quality organic meat and skin products. Sadly the international animal rights lobby can be relied upon to place every possible obstacle in the path of what could be a sensible and sustainable outcome for Australia's rangeland environments. There certainly are legitimate animal welfare issues to be addressed, especially with regard to the fate of pouched young and dependent juveniles at foot, but these need to be constructively addressed in the context of the wider environmental and animal welfare issues involved. A narrow focus on a single issue, sabotages consideration of the wider costs and benefits and hijacks reasoned decision-making processes.

Burning issues

My time at NPWS coincided with a couple of the worst fire seasons for a generation. Apart from the terrible personal tragedy of losing four staff and having three others seriously injured in a hazard reduction burn accident at Mt Ku-ring-gai in June 2000, fire management was a controversial issue throughout my term.

The perspectives involved are very complex including the advocates of a return to grazing to the high country of the Australian Alps; those who still resented the loss of state forest grazing leases which involved routine annual burns to encourage 'green pick' for livestock; and those who sought to score political points in rural constituencies.

Even armed with the best available science delivered by a very capable in-house team, it was always difficult to win the argument in the media. It was difficult to effectively make simple points, such as that the annual burn regimes practised by indigenous people in northern Australia have little relevance in NSW; that grazing by up to 200,000 sheep and 40,000 cattle in the high country didn't do much to ameliorate the 1939 fires; and that some Mountain Ash *Eucalyptus regnans* forests develop such high fuel loads precisely because they will only burn in the extreme high temperature and low humidity applying during a major wildfire.

What chance then to explain the complexities of the physiology of fire tolerant as opposed to fire resistant vegetation and the possibility that repeated fuel reduction burns can have the effect of increasing the fuel load of fire tolerant species in some situations?

Ably led by people like Bob Conroy, NPWS staff remained focused on the job, systematically planning strategic fire management zones and property protection zones, increasing hazard reduction burns wherever possible and striving throughout to fulfil their statutory obligations to look after the interests of protected and threatened species.

Where to from here?

Tim Low's *New Nature* (2002) and the recent CSIRO work on the implications of climate change for the National Reserve System (Dunlop and Brown 2008) challenge us to develop a new paradigm to secure biodiversity assets in the twenty-first century.

In part, this will require us to shift our collective focus from trying to restore a pre 1788 situation, to acknowledge the dynamic nature of ecology in the Australian landscape and through innovative partnerships to devise landscape wide management strategies that are sustainable and resilient in the face of a changing climate.

More and more, parks and reserves will need to be managed through collaborative engagement with other landowners, land managers and water managers across the bioregion. The goal will be to manage change to minimise loss of biodiversity values. In each instance we will have to be clear about the precise management objectives, monitor the condition of key variables and adjust management strategies as necessary.

We will only succeed if we can stay engaged with communities across NSW and mobilise available skills and interest in innovative programs.

References

Dunlop M, Brown P. 2008. *Implications of climate change for Australia's National Reserve System: a preliminary assessment.* Prepared for the Federal Government by CSIRO scientists

Low, T. 2002. *New Nature*. Penguin, Camberwell, Victoria.

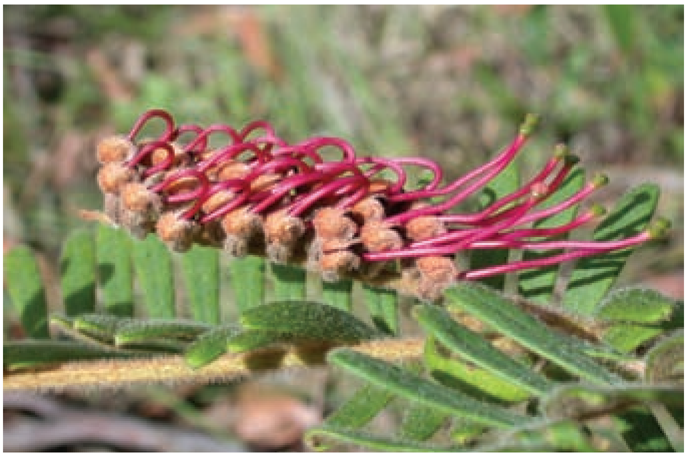
APPENDIX I

Signing of the Paroo River Agreement between NSW and Queensland attended by Premiers Bob Carr and Peter Beattie, Minister Bob Debus. Bob Carr at the microphone, Peter Beattie to his immediate left, Richard Kingsford with the hat second from right, and Bob Debus on the right hand edge of the photo.

Photo, Allan House

Brian Gilligan, on the right hand edge of the group, with a whale watch study team at Point Solander in Kamay Botany Bay National Park.

Photo, DECCW.



Grevillea caleyi flower and foliage.

Photo, T. Auld.

Weeds such as Lantana can out compete young seedlings of *Grevillea caleyi.*

Photo, T. Auld.

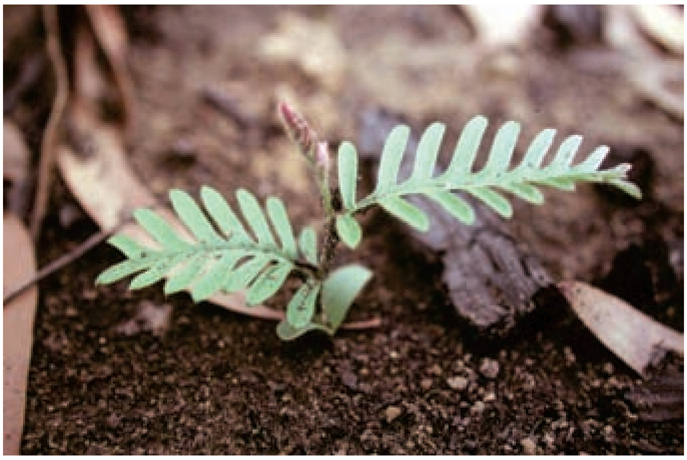
APPENDIX I

Dr Mark Ooi counting fruit on a mature *Grevillea caleyi* plant

Photo, T. Auld.

Dr Tony Auld examining a *Grevillea caleyi* plant recently killed by fire.

Photo, J. Scott.



Grevillea caleyi seedling emerging after fire.

Photo, T. Auld.

Measuring soil temperatures during and after fire

Photo, R. Bradstock

APPENDIX I

Clearing of remnant habitat threatens the survival of the endangered plant *Grevillea caleyi.*

Photo, T. Auld.

The main channel of the Paroo River in northwestern NSW is an important habitat for feeding Australian Pelicans

Photo, R. T. Kingsford, March 2008.

The extensive floodouts that make the floodplain where the Paroo River meets the Cuttaburra Creek, flowing from the Warrego River.

Photo, J.L. Porter, May 2008.

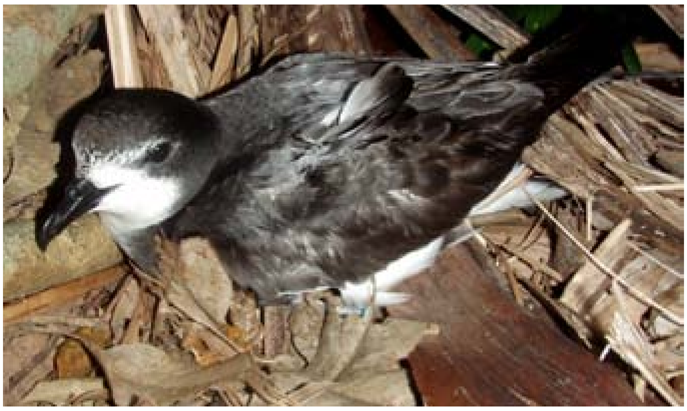
Lake Numalla is a freswhater lake and part of Currawinya National Park on the Paroo River, and occasionally supports large colonies of Australian Pelicans.

Photo, J.L. Porter, April 2008

APPENDIX I

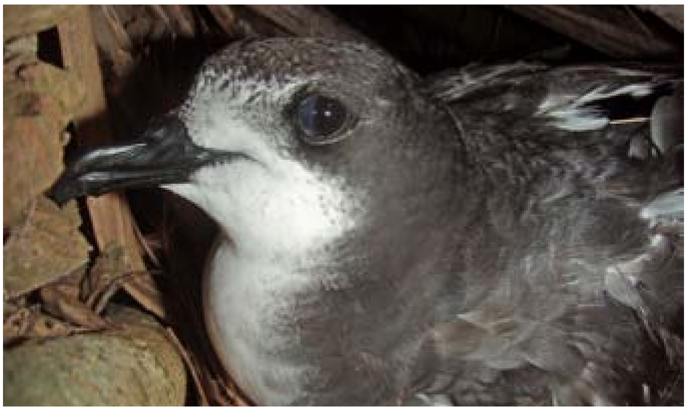
The Paroo River consists of a string of waterholes that make up the main channel and wide floodplain of floodplain eucalypts (coolibah Eucalyptus coolabah and yapunyah trees *E. ocropholia*).

Photo, J.L.Porter, April 2008.



Adult Gould's petrel on the forest floor.

Photo, N. Carlile



Adult Gould's petrel head detail.

Photo, N. Carlile.